

REMARKS

Claims 1-23 and 37 are currently pending in the application. By this amendment, claims 1, 7, 8, 11, 12, and 18-23 are amended and claim 37 is added. The above amendments do not add new matter to the application and are fully supported by the specification. Reconsideration of the rejected claims in view of the above amendments and the following remarks is respectfully requested.

Objection to Specification

The specification has been objected to for minor typographical mistakes. The specification has been amended according to the Examiner's suggestions. The objection to the specification should be withdrawn.

Objection to Claims

Claims 11, 18, and 23 were objected to for minor typographical mistakes. Claims 11, 18, and 23 have been amended according to the Examiner's suggestions. The objections to the claims should be withdrawn.

35 U.S.C. §112 Rejection

Claims 7-14 and 20-23 were rejected under 35 U.S.C. §112, 2nd paragraph. This rejection is respectfully traversed.

Claim 7 was rejected because it was asserted that the term "an n-type device" does not particularly point out if it is the n-type device from claim 1 or a different n-type device. Claim 7 has been amended to recite "the n-type device" to clarify that it refers to the n-type device of claim 1. Accordingly, Applicants respectfully request that the rejection over claim 7 be withdrawn.

Claim 8 was rejected because it was asserted that the limitation "the deposited patterned photo-resist layer" lacks antecedent basis. Claim 8 has been amended to depend from claim 5 where the step of depositing a patterned photo-resist layer is

positively recited. Accordingly, Applicants respectfully request that the rejection over claim 8 be withdrawn.

Claims 9-14 were rejected because they depend from claim 8. The amendment to claim 8, as discussed above, provides proper antecedent basis. Accordingly, Applicants respectfully request that the rejection over claims 9-14 be withdrawn.

Claim 20 was rejected because it was asserted that the term “the strain layer” does not particularly point out if it is supposed to be the strain layer on the substrate or the strain layer in the gap. Claims 21-23 were rejected for the same reason. Claim 19 has been amended to clarify that there is “a first strain layer” and “a second strain layer”. Claims 19-23 have been amended to specify “the second strain layer”. Accordingly, Applicants respectfully request that the rejection over claims 20-23 be withdrawn.

35 U.S.C. §102 Rejection

Claims 1-2, 7, and 17-18 were rejected under 35 U.S.C. §102(b) for being anticipated by U. S. Patent Application Publication No. 2002/0086472 issued to Roberds *et al.* (“Roberds”). Claims 1, 18-19, and 23 were rejected under 35 U.S.C. §102(e) for being anticipated by U. S. Patent No. 6,852,086 issued to Lee *et al.* (“Lee”). Claims 1, 3-4, 8-12, 15, and 18 were rejected under 35 U.S.C. §102(e) for being anticipated by U. S. Patent No. 6,891,192 issued to Chen *et al.* (“Chen”).

Claims 1, 2, 7, 17, and 18

Claims 1, 2, 7, 17, and 18 were rejected under 35 U.S.C. §102(b) for being anticipated by U. S. Patent Application Publication No. 2002/0086472 issued to Roberds *et al.* (“Roberds”). This rejection is respectfully traversed.

Claim 1 has been amended to recite the step of “depositing a spacer material over portions of the gap”. This allows the controlled growing of a strain layer in the gap on the remaining portions.

Roberds does not teach or suggest this combination of features. In Roberds there is no spacer material used in the gap. Since Roberds has no spacer material, the strain layer grown in the gap lines a surface of the gap which is larger than the gate width (see Roberds figure 4). Due to the lack of a spacer material in the gap, the size and location of the Roberds strain layer cannot be controlled as precisely as that of the claimed invention.

Accordingly, Applicants respectfully request that the rejection over claims 1-2, 7, and 17-18 be withdrawn.

Claims 1, 18, 19, and 23

Claims 1, 18, 19, and 23 were rejected under 35 U.S.C. §102(e) for being anticipated by U. S. Patent No. 6,852,086 issued to Lee *et al.* (“Lee”). This rejection is respectfully traversed.

As previously discussed, claim 1 has been amended to recite the step of “depositing a spacer material over portions of the gap”. Lee does not teach the combination of steps as recited in claim 1. Instead Lee shows forming a trench, not a gap.

Further regarding claims 1 and 19, the Examiner asserts that “the growing a strain layer in the gap limitation ... is a functional limitation that is presumed to be inherent in the above method of Lee et al. because their method is substantially identical to the applicant’s method as claimed in claims 1, 18-19, and 23.” The Examiner refers to MPEP §2112.01 for support. Applicants respectfully disagree.

Claims 1 and 19 are method claims. The recitations “growing a strain layer in at least a portion of the gap...” (claim 1) and “growing a strain layer in the gap” (claim 19) are positively recited method steps – **they are not functional limitations**. MPEP 2173.05(g) describes functional limitations:

A functional limitation is often used in association with an element, ingredient, or step of a process to define a particular capability or purpose that is served by the recited element, ingredient or step.

The recitation “growing a strain layer in the gap” is a step of a process – it is not a definition or description of a particular capability or purpose that is served by the step. Thus, it is not a functional limitation.

Also, and in any event, to anticipate a claim the reference must teach every element of the claim. Lee does not teach or suggest the step of growing a strain layer in a gap. Therefore, Lee does not teach or suggest every recited step and the rejection is improper.

The Examiner states that the recitation of “growing a strain layer in the gap” is presumed inherent in Lee because Lee’s method is substantially identical to the applicant’s method as claimed in claims 1, 18, 19, and 23. Applicant’s respectfully disagree. The two methods are not substantially identical because Lee does not teach or suggest Applicant’s positively recited method step of growing a strain layer in the gap in claims 1 and 19, nor does Lee even show a gap.

The Examiner relies on MPEP §2112.01 for support of the assertion that the step of growing the strain layer in the gap is inherent in Lee. It is noted that MPEP §2112.01 describes composition, product, and apparatus claims and states in part:

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established.

Applicants claim a method of manufacture; but Lee does not disclose the same method steps or the same end product. For example, Lee does not disclose growing a strain layer in the gap, and Lee’s end product does not have a strain layer in a gap. Thus, the apparatus produced by Applicants’ method of manufacture is not identical or substantially identical to that of Lee. Lee only shows a sacrificial oxide liner (302), or a permanent oxide liner (400), or an oxide trench fill (500) in a trench. Lee does not show a strain layer in a gap. Therefore, the Examiner cannot presume a *prima facie* case of anticipation.

Accordingly, Applicants respectfully request that the rejection over claims 1, 18, 19, and 23 be withdrawn.

Claims 1, 3, 4, 8-12, 15, and 18

Claims 1, 3, 4, 8-12, 15, and 18 were rejected under 35 U.S.C. §102(e) for being anticipated by U. S. Patent No. 6,891,192 issued to Chen *et al.* ("Chen"). This rejection is respectfully traversed.

Claim 1 has been amended to recite the step of "depositing a spacer material over portions of the gap". Chen does not disclose depositing a spacer material over portions of the gap. As the Examiner explains in the Office Action, Chen discloses forming trenches, then covering the gate stack, then growing a strain layer in the trenches. Absent from these steps is any teaching or suggestion of depositing a spacer material over portions of the trenches.

Accordingly, Applicants respectfully request that the rejection over claims 1, 3-4, 8-12, 15, and 18 be withdrawn.

35 U.S.C. §103 Rejection

Claims 5-6 and 8-14 were rejected under 35 U.S.C. §103(a) for being unpatentable over U. S. Patent Application Publication No. U.S. 2002/0086472 issued to Roberds *et al.* ("Roberds") in view of U. S. Patent Application Publication No. U.S. 2001/0003364 issued to Sugawara *et al.* ("Sugawara"). Claim 16 was rejected under 35 U.S.C. §103(a) for being unpatentable over U. S. Patent No. 6,891,192 issued to Chen *et al.* ("Chen") in view of in view of U. S. Patent No. 6,703,293 issued to Tweet *et al.* ("Tweet").

Claims 5-6 and 8-14

Claims 5-6 and 8-14 were rejected under 35 U.S.C. §103(a) for being unpatentable over U. S. Patent Application Publication No. U.S. 2002/0086472 issued to Roberds *et al.* ("Roberds") in view of U. S. Patent Application Publication No. U.S.

2001/0003364 issued to Sugawara *et al.* ("Sugawara"). This rejection is respectfully traversed.

Claims 5-6 and 8-14 depend from allowable independent claim 1. The Sugawara reference does not compensate for the deficiencies of claim 1. Also, the Examiner states:

Regarding claims 11-14, Sugawara *et al.* teach the formation of shallow trench isolations (10a) by filling trenches (9) with silicon oxide as shown in Figs. 5A-5C and as described in paragraphs [0040] to [0042].

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Roberds *et al.* and Sugawara *et al.* in order to use resist masks for processing NMOS and PMOS devices separately and also for forming isolation trenches, as taught by Sugawara *et al.*

Applicants respectfully disagree with the rejection and submit that these references do not show what is recited in claims 12-14. The Examiner has failed to make a *prima facie* case of obviousness because the references cited do not teach or suggest all of the claimed limitations. Specifically, neither Roberds nor Sugawara teach or suggest forming a gap, depositing a spacer material over portions of the gap, and growing a strain layer in a portion of the gap. Roberds shows forming a gap and growing a strain material. Roberds does not show depositing a spacer material on exposed portions of the gap for the purpose of defining the boundaries of the strain material. Sugawara discloses creating layers, then creating a gap, then filling the gap with silicon oxide (see Sugawara figures 4D, 5A, and 5B). Sugawara does not disclose forming the trench, then depositing a spacer material on exposed portions of the trench, then growing a strain material. Furthermore, the Examiner does not assert that Sugawara discloses depositing a spacer material over portions of the gap. Rather, the Examiner only mentions the formation of a trench and filling the trench with oxide. Therefore, the cited references do not teach or suggest every element of the claim.

The Examiner has additionally failed to make a *prima facie* case of obviousness because no motivation is provided for depositing a spacer material on exposed portions of the Roberds gap. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in

the art, to modify the reference or to combine reference teachings. The Examiner asserted that it is well known to use photo-resist masks as a pattern to etch the exposed regions. It is noted that this motivation statement only applies to the photo-resist element, and does not take into account any spacer material on exposed portions of the gap. Furthermore, this motivation is inapplicable to applying a spacer in the trench of Roberds because Roberds is not etching exposed regions of the trench. Therefore, the Examiner has not provided any motivation for depositing a spacer material on exposed portions of the Roberds gap.

Accordingly, Applicants respectfully request that the rejection over claims 5-6, 8-11, and 14 be withdrawn.

Claim 16

Claim 16 was rejected under 35 U.S.C. §103(a) for being unpatentable over U. S. Patent No. 6,891,192 issued to Chen *et al.* ("Chen") in view of in view of U. S. Patent No. 6,703,293 issued to Tweet *et al.* ("Tweet"). This rejection is respectfully traversed. Claim 16 depends from claim 1. Claim 1 has been amended to recite the step of "depositing a spacer material over portions of the gap". The Tweet reference does not cure the deficiencies of Chen with regard to claim 1 as discussed above.

Accordingly, Applicants respectfully request that the rejection over claim 16 be withdrawn.

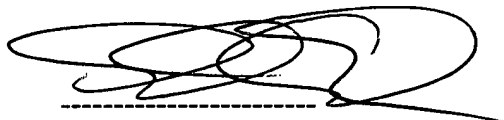
Other Matters

Claim 37 is added to further define Applicant's invention and is believed allowable as it depends from allowable independent claim 1.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant submits that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required. Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 09-0458.

Respectfully submitted,
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